TEAC® AN-300

NOISE REDUCTION UNIT
SERVICE MANUAL

TEAC CORPORATION SALES OFFICE: SHINJUKU BLDG. 1-8-1, NISHI-SHINJUKU, TOKYO PHONE (03) 343-5151

TEAC CORPORATION OF AMERICA 7733 TELEGRAPH ROAD, MONTEBELLO, CALIFORNIA 90640 PHONE (213) 726-0303

TEAC TONBAND-ANLAGEN VERTRIEBS GmbH 6200 WIESBADEN-ERBENHEIM, EGERSTRASSE 2, WEST GERMANY PHONE (06121) 74225-74228

TEAC HONGKONG LIMITED ROOM NO. 1105 MELBOURNE PLAZA 33 QUEEN'S ROAD, HONG KONG PHONE 252027

51030010 B

1. GENERAL DESCRIPTION

The TEAC AN-300 is a 4 Channel DOLBY "B" system NOISE REDUCTION UNIT designed for use with any quality tape deck having independent INPUT and OUTPUT LEVEL controls. Each DOLBY circuit is employed for recording or playback with its operating mode selected by a change-over switch. Unit operation and service is extremely simple and easy.

This manual describes the adjustment, inspection and calibration procedure to be accomplished by service engineers. Explanations which duplicate those in the owners instruction manual, and detailed circuit theory operation have been omitted. Refer to the owners instruction manual for complete operating instructions.

In the event difficulties are encountered during complex adjustment or repair, contact the nearest TEAC Factory Service Center or Field Office.

INDEX

1. GENERAL DESCRIPTION
2. SERVICE DATA
3. PRECAUTION
4. EQUIPMENT REQUIRED
5. LINEARITY CHARACTERISTIC CHECK
6. GAIN-LAW ADJUSTMENT
7. LEVEL METER CALIBRATION
8. CALIBRATION OSCILLATOR LEVEL ADJ.
9. MULTIPLEX FILTER ADJ.
10. RECORD/PLAYBACK FREQUENCY RESPONSE CHECK
    SCHEMATIC DIAGRAM
11. OVERALL PERFORMANCE CHECK
12. PARTIAL DISASSEMBLY
13. PARTS LOCATION
14. TROUBLE SHOOTING
    PACKING FOR SHIPMENT
    WIRING DIAGRAM
    PC BOARD
    EXPLODED VIEW AND PARTS LIST

2. SERVICE DATA

	SPECIFICATIONS	DESCRIPTION	CONDITION
RECORD SECTION:	Frequency Response	10kHz: +10dB ±1dB 1kHz : 5.5dB ±1dB	Measured at level -40dB below specified Input level.
		20Hz∿15kHz, ±1dB 20Hz∿20kHz, ±1dB	Measured at specified Input level. With MPX FILTER SW OUT position.
	Record Input Sensitivity (LINE INPUT jacks)	100mV ±1dB	
	INPUT Impedance	70kΩ or more	
	Record Output Level (Record Output jacks)	300mV	Load impedance 50kΩ or more
	Harmonic Distortion	0.2% or less	With Frequency 1kHz
	Multiplex Filter	19kHz, -30dB or more 38kHz, -25dB or more	With DOLBY NR SW OUTPUT position
	Signal-to-Noise Ratio	65dB or higher	With INPUT jacks Shorted
	Channel Separation	55dB or less	With Frequency 1kHz INPUT jacks with 5.6KΩ connect
	GAIN Adj. Sensitivity	10dB ±0.25dB	
	LAW Adj. Sensitivity	2dB ±0.25dB	
PLAYBACK SECTION:	Frequency Response	10kHz, -10dB ±1dB 1kHz, -5.5dB ±1dB	Measured at level -40dB below specified Input level.
		20Hz∿15kHz, ±1dB 20Hz∿20kHz, ±1dB	Specified Input level. With MPX FILTER SW OUT position
	Playback Input Sensitivity (TAPE INPUT jacks)	100mV ±1dB	
	INPUT Impedance	70kΩ or more	
	Playback Output level (MONITOR OUTPUT jack)	300mV	Load Impedance 50kΩ or more

	SPECIFICATIONS	DESCRIPTION	CONDITION
Cont.	Harmonic Distortion	0.2% or less	With Frequency 1kHz
	Low Pass Filter	20kHz, 0dB 35kHz, -3dB 100kHz, -50dB or more	With MPX FILTER SW OUT position
	Signal-to-Noise Ratio	65dB or higher	INPUT jack Shorted
	Channel Separation	60dB or less	With Frequency 1kHz INPUT jack With 5.6KΩ connect
POWER SUPPLY:	AC INPUT Voltage	100V 10% 117V 10% 100,117,220,240V (With Voltage Selector SW)	AN-300D AN-300A AN-300F
	AC INPUT Frequency	50Hz 60Hz	
	AC OUTLET	500W(MAX.)	Power unswitched
	Power Consumption	13W	

NOTE

As a result of countinuing changes and improvements during the production run, minor differences may be found between early and later machines. Refer to manual change sheets for information concerning modifications.

Should you have any questions concerning this manual, please contact Instruction Manual Project Department. Your query will receive personal attention.

Address: TEAC Corporation
Sales Office
Instruction Manual Project Dept.
Shinjuku Building
1-8-1, Nishi-Shinjuku,
Shinjuku-ku, Tokyo,
Japan

3. PRECAUTION

The AN-300 is particularly susceptible to induced hum, VTVM readings may be affected, therefore when making measurements observe the waveshapes at the VTVM with an oscilloscope. Ascertain that the waveshapes are clean and free of induced hum.

When making measurements at the TEST POINTS, the recommended and most convenient probe is MIYAMA #300, parts No. 57244040 IC-Clip. If this probe is not available use an insulated mini alligator Clip. Do not allow the clip to short the test points to adjacent components.

Vibration may cause the adjustable potentiometers (VR) of the AN-300 to move thereby upsetting the adjustments. After performing the adjustment procedures always secure the adjustable components with a drop of locking paint such as LOCTITE.

4. EQUIPMENT REQUIRED

Audio Frequency Oscillator:	20Hz ∿ 50kHz
Oscilloscope:	General purpose
Attenuator:	0 ∿ 9 dB in 0.5 dB steps
Resistor:	4.7kΩ, 1 Watt
AC VTVM:	Input impedance 100kΩ or higher Frequency Response 20Hz ∿ 50kHz
Adjustment Driver:	Non inductive
Head Tools:	General

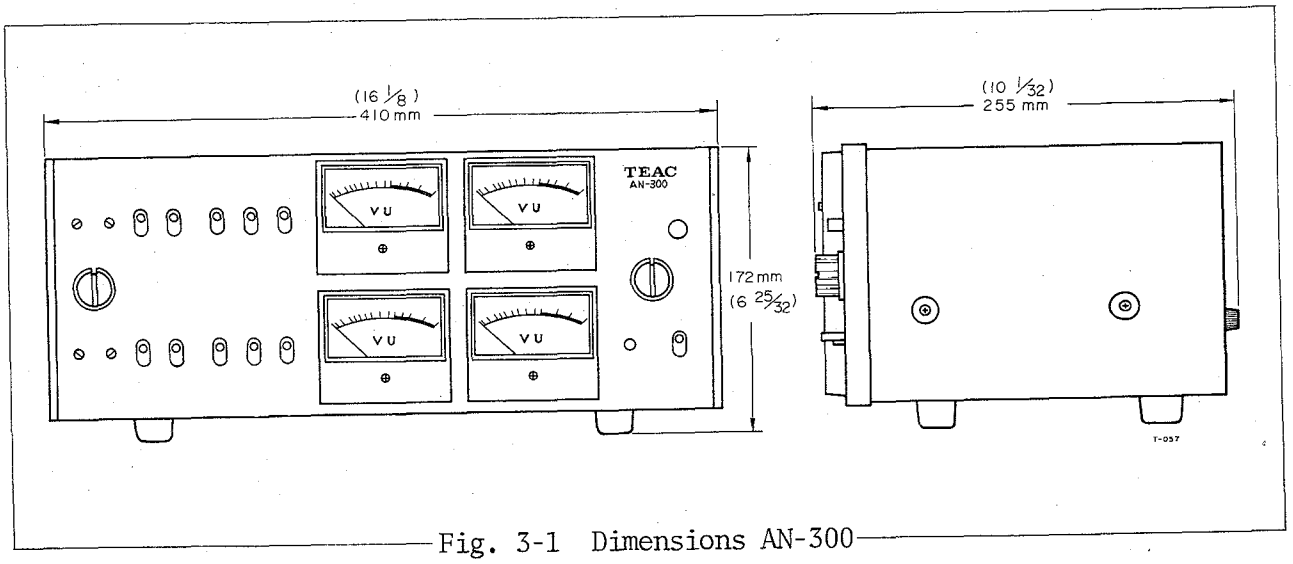


Fig. 3-1 Dimensions AN-300

5. LINEARITY CHARACTERISTIC CHECK

a) GENERAL

The linearity characteristics of the AN-300 vary with the level and frequency of the applied signal. The signal during record mode of operation is compressed, the playback signal is expanded by exactly the same amount.

Linearity characteristics are adjusted in the playback mode. Since the same circuitry is utilized for recording and playback, only one adjustment is required, that is to say if the linearity characteristics are properly adjusted in the playback mode, they will also be adjusted for the record mode of operation.

To insure perfect performance, procedures are given for checking the frequency response and linearity characteristics in both record and playback modes.

The operational characteristics of the DOLBY "B" type noise reduction system are determined by the GAIN-LAW adjustments. Multiplex filter characteristics, signal noise ratio checks etc. are outlined elsewhere in this manual.

SPECIAL NOTE

GAIN- The low level signal linearity variation characteristic is determined by the GAIN adjustment. This will be set at 10 dB in step 7 below. We refer to this adjustment as "GAIN" and it is a critical determining factor in the overall performance of the DOLBY "B" type noise reduction system.

LAW- After adjusting the GAIN, in step 8 below we will adjust the FET operation threshold level with the LAW volume adjustment. In the DOLBY "B" type system this characteristic is called LAW and is set at 2 dB ±0.25 dB. Again this is a critical adjustment and must be performed accuratedly if optimum noise reduction is to be attained.

Proceed to the next page for the "GAIN-LAW ADJUSTMENT"

6. GAIN-LAW ADJUSTMENT

b) PREPARATIONS

1. Set the controls of the AN-300 as outlined below:

INPUT SW	→	LINE
MODE SW	→	REC
MPX FILTER	→	OUT
DOLBY SW	→	IN
CAL TONE SW	→	OUT

MONITOR: NORMAL (⊓) / SOURCE

OUTPUT LEVEL Control ... MAX. Counter clockwise
INPUT LEVEL Control ... MAX. clockwise

2. Set the LAW adjustments on the DOLBY PROCESSOR PC Board as follows:
   VR - 101 ····· L Channel 1 and 3
   VR - 102 ····· R Channel 2 and 4
   for MAX. counter-clockwise (CCW)

3. Short the test points with a jumper wire as outlined below:

FET GATE	NO.29∿35 ···	L Channel 1 and 3
FET GATE	NO.30∿35 ···	R Channel 2 and 4

   The purpose of shorting these points together is to pinch off (disable) the FET.

4. Connect the VTVM to the test point listed below and chassis ground:

CAL POINT	NO.25 ···	L Channel 1 and 3
CAL POINT	NO.26 ···	R Channel 2 and 4

5. Apply a 5 kHz signal from the audio oscillator, with the VTVM connected as directed in step 4 above. Set the attenuator to obtain an indication on the VTVM of 3 mV. Begin the adjustment with the L channel.

6. Remove the VTVM from CAL POINT NO.25,26 and connect it to the REC OUTPUT jacks. The VTVM indication at this point should be considered 0 dB.

7. Place the DOLBY NR switch to the [IN] position. Adjust the GAIN volume to obtain a +10 dB (±0.25 dB) indication on the VTVM. This is the low level signal linearity change adjustment.

   GAIN VR - 103 ····L Channel 1 and 3
   GAIN VR - 104 ····R Channel 2 and 4

8. Disconnect the jumper leads installed in step 3. Now adjust the LAW volume to obtain a 2 dB (±0.26 dB) decrease from the indication obtained in step 7.

   LAW VR - 101 ····· Channel 1 and 3
   LAW VR - 102 ····· Channel 2 and 4

   This adjustment determines the FET operating threshold level.

9. After making the above adjustments, secure all VR with locking paint.

GAIN-LAW ADJUSTMENT LOCATIONS

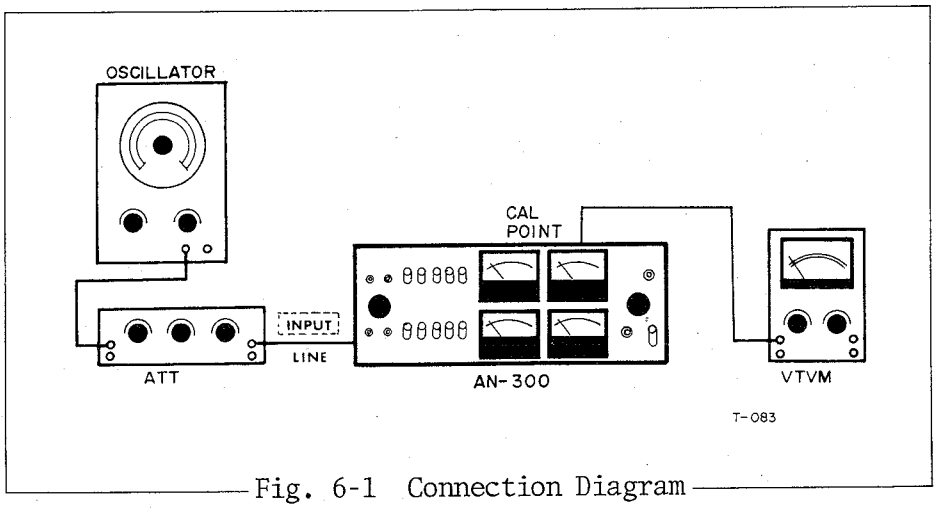


Fig. 6-1 Connection Diagram

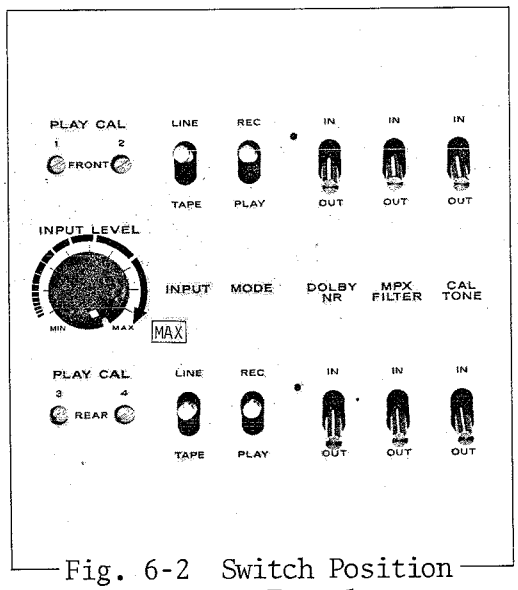


Fig. 6-2 Switch Position
-Example-

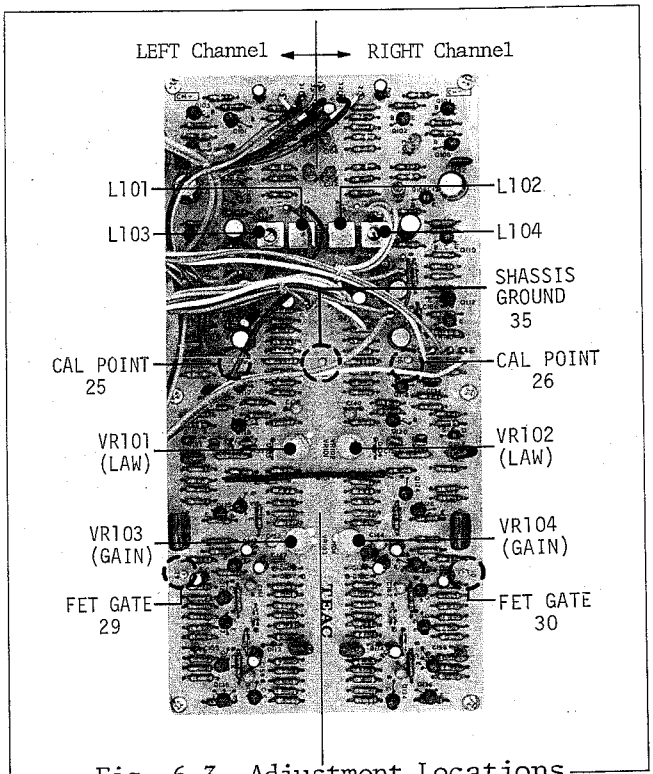


Fig. 6-3 Adjustment Locations

7. LEVEL METER CALIBRATION

a) GENERAL

The DOLBY level in the AN-300 is set at 100mV as measured at the CAL POINT on the DOLBY PROCESSOR PC Board. The following procedures are used to adjust the AN-300 caliblation meter sensitivity and accuracy.

b) PREPARATIONS

1. Set the AN-300 controls as outlined below:

INPUT SW	→	LINE
MODE SW	→	REC
MPX FILTER	→	OUT
DOLBY NR SW	→	OUT
CAL TONE SW	→	OUT

MONITOR
NORMAL (□)
SOURCE

OUTPUT LEVEL Control
INPUT LEVEL Control — MAX. clockwise
PLAY CAL VR

2. Connect the VTVM between CAL POINT of the DOLBY PROCESSOR PC Board and chassis ground. Set the attenuator for -30 dB.

3. Set the VR on the METER amplifier PC Board as below:

   VR - 401,402 ••• Channel 1 and 2
   VR - 403,404 ••• Channel 3 and 4

   Set for all VR MAX. counter-clockwise

4. Apply a 400 Hz signal from the Audio oscillator, adjust the attenuator to obtain a reading of 100 mV.

5. Adjust all VR to obtain 0 VU (CAL Position) on the meter of the AN-300.

   VR - 401 ••• Channel 1
   VR - 402 ••• Channel 2
   VR - 403 ••• Channel 3
   VR - 404 ••• Channel 4

6. After making the above adjustments, secure all VR with locking paint.

LEVEL METER ADJUSTMENT LOCATIONS

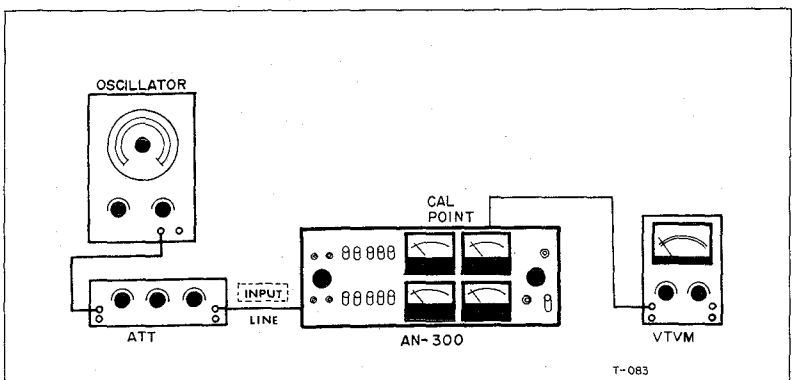


Fig. 7-1 Connection Diagram

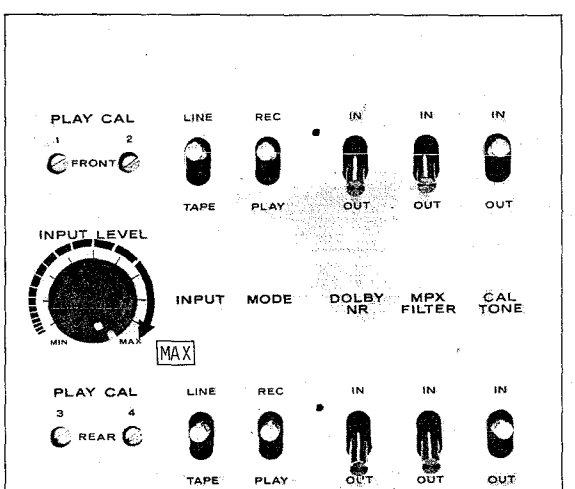


Fig. 7-2 Switch Position
-Example-

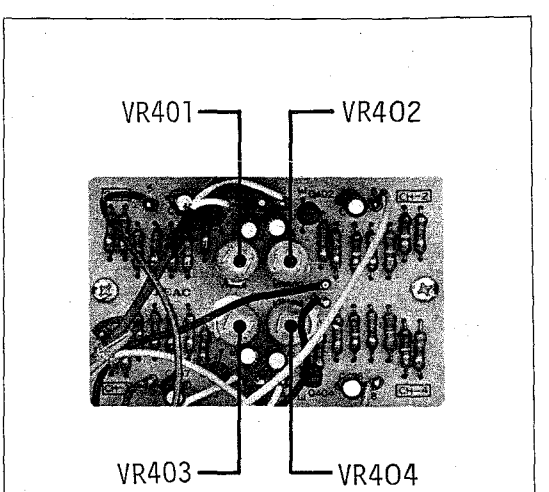


Fig. 7-3 Adjustment Locations

8. CALIBRATION OSCILLATOR LEVEL ADJUSTMENT

a) GENERAL

The AN-300 has an internal calibration oscillator to enable you to properly calibrate the AN-300 to the associated tape deck. In this step the oscillator output level will be adjusted.

b) PREPARATIONS

1. Set the controls of the AN-300 as outlined below:

INPUT SW	→ LINE
MODE SW	→ REC
DOLBY NR	→ IN
MPX FILTER	→ OUT
CAL TONE SW	→ IN

2. Connect the VTVM across TP#12 (OSC PC Board on the bottom of the AN-300) and chassis ground 35.

3. Adjust the VR-301 (OSC PC Board) to obtain a 100 mV indication on the VTVM. This single adjustment takes care of all 4 channels.

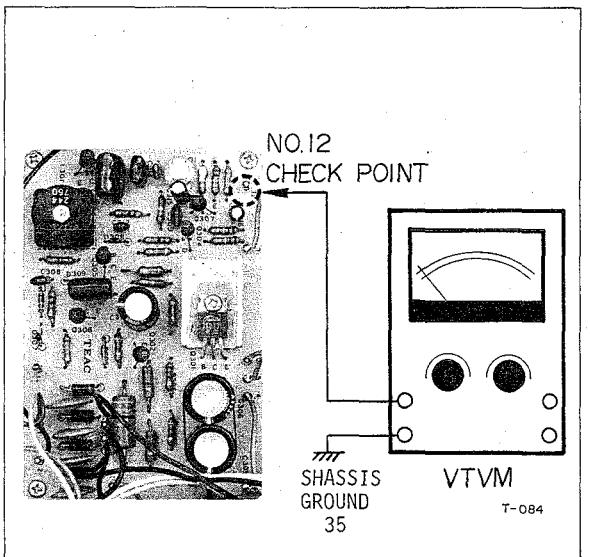


Fig. 8-1 Connection Diagram

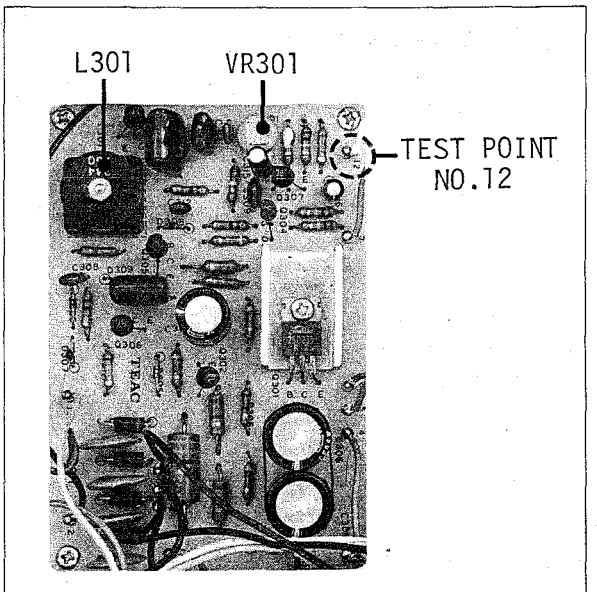


Fig. 8-2 Adjustment Locations

9. MULTIPLEX FILTER ADJUSTMENT

a) GENERAL

When an FM tuner is used as a program source the action of the AN-300 could be affected by a multiplex leak carrier. The AN-300 incorporates an internal MPX filter to bypass the leak carrier.

b) PREPARATIONS

1. Set AN-300 controls as follow:

INPUT SW	⟶	LINE
MODE SW	⟶	REC
DOLBY NR	⟶	OUT
MPX FILTER	⟶	IN
CAL TONE	⟶	OUT

MONITOR: NORMAL (凵) / SOURCE

INPUT LEVEL Control ••• MAX. clockwise

2. Set the audio oscillator frequency at 400 Hz. Adjust signal level with attenuator to obtain an indication at the VTVM of -10 dB (0.244 mV). Begin procedure with the L channel.

3. Set oscillator frequency to 19 kHz ±10%. Signal level is not changed. Adjust L-103/104 for a minimum indication at the VTVM.

4. Attenuation of the 19 kHz signal should be greater then 30 dB (7.74 mV) as compared to the original reading.

5. When optimum adjustment is obtained, secure L-103/104 with Locking Paint.

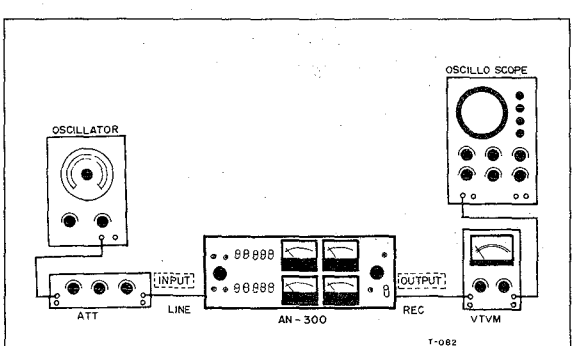


Fig. 9-1 Connection Diagram

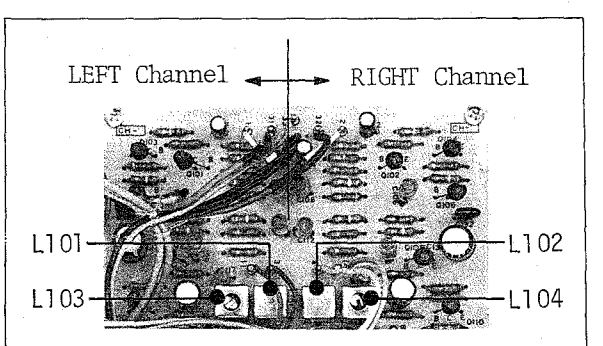


Fig. 9-2 Adjustment Locations

10. RECORD/PLAYBACK FREQUENCY RESPONSE CHECK

a) GENERAL

Assuming the foregoing GAIN-LAW adjustments have been carefully performed and satisfactory results obtained on the accuracy checks, the frequency response for both record and playback operation sould conform to the charted specification.

The following checks are used to determine overall performance of the AN-300 and may be usefull when trouble shooting.

10-1. RECORD FREQUENCY RESPONSE CHECK

b) PREPARATIONS

1. Set the AN-300 controls as outlined below:

INPUT SW → LINE
MODE SW → REC
MPX FILTER → OUT
DOLBY SW → IN
CAL TONE SW → OUT

MONITOR
NORMAL (□) SOURCE

OUTPUT LEVEL Control ··· MAX. counterclockwise
INPUT LEVEL Control ··· MAX. clockwise

2. Apply a 400 Hz signal from the AF socillator, set AF oscillator output level to obtain a center indication(CAL position) on the meter of the AN-300. The voltage at the INPUT jacks will be the DOLBY reference level.

c) PROCEDURES

With equipment connected as shown in Fig.10-3 and the setting in accordance with "Preparations", measure the frequency response for each input level (see RECORD FREQUENCY RESPONSE CURVE).

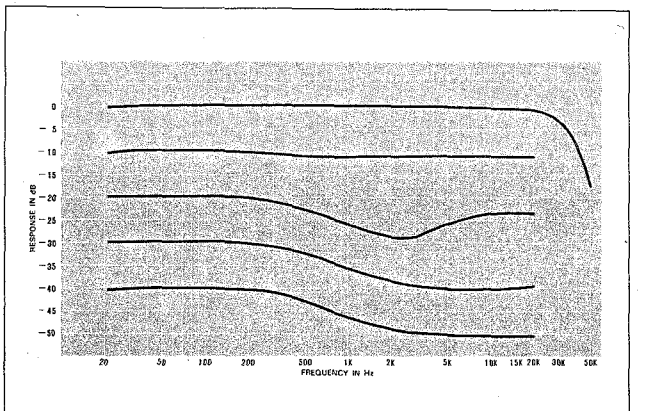


Fig. 10-1 Frequency Response Curve -Record-

10-2. PLAYBACK FREQUENCY RESPONSE CHECK

b) PREPARATIONS

1. Set the controls of the AN-300 as outlined below:

INPUT SW	→ TAPE
MODE SW	→ PLAY
MPX FILTER	→ OUT
DOLBY NR SW	→ IN
CAL TONE SW	→ OUT

MONITOR
NORMAL (⎍) SOURCE

PLAY CAL VR ..... MAX. clockwise
OUTPUT LEVEL Control ... MAX. clockwise

2. Apply a 400 Hz signal from the Audio oscillator, set oscillator output level to obtain a center indication on the meter of the AN-300 (CAL position).

c) PROCEDURES

With equipment connected as shown in Fig.10-4, setting in accordance with "Preparations", measure the frequency response for each input level.

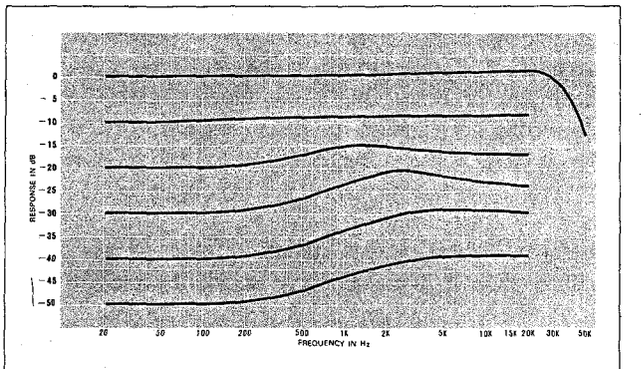


Fig. 10-2 Frequency Response Curve -Playback-

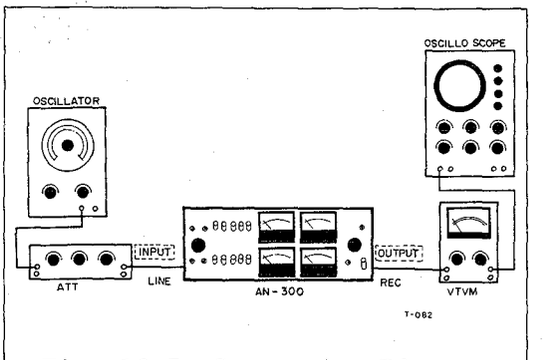


Fig. 10-3 Connection Diagram -Record-

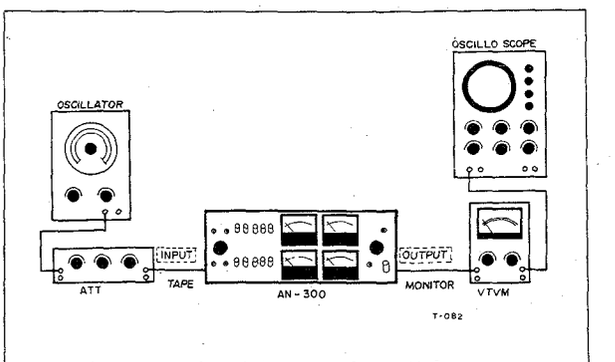


Fig. 10-4 Connection Diagram -Playback-

11. OVERALL PERFORMANCE CHECK

PREPARATIONS

1. Set the controls of the AN-300 as outlined below:

FRONT #1, #2	INPUT SW	→ LINE	REAR #3, #4	INPUT SW	→ TAPE
	MODE SW	→ REC		MODE SW	→ PLAY
	DOLBY NR	→ IN		DOLBY NR	→ IN
	MPX FILTER	→ OUT		MPX FILTER	→ OUT
	CAL TONE	→ OUT		CAL TONE	→ OUT

INPUT LEVEL cntrol ••• MAX, (CW)

MONITOR: NORMAL (□), TAPE

2. Set the audio oscillator for 400 Hz, adjust output attenuators for a 0 VU (CAL) indication on the AN-300 VU meters #1 and #2.

3. Adjust the front PLAY CAL #1 for a 0 VU reading on rear VU meter #3. Adjust the front PLAY CAL #2 for a 0 VU reading on rear VU meter #4.

4. With all VU meters indicating 0 VU, the VTVM should indicate 300 milivolts. If these readings are not obtained, perform the alignment procedures described elsewhere in this Manual.

5. Considering the 300 mV in step 4 to represent 0 dB, sweep the frequencies from 20 Hz to 20 kHz. The output should remain flat as shown in Fig.11-2.

6. Decreasing the input level in 10 dB steps, sweep the frequencies at each range and compare the VTVM reading with the chart in Fig.11-2.

7. An overall response check can be accomplished as follows: With the audio oscillator 30 dB (9.48 mV) down from its level in step 3, set it for 5 kHz. Note the VTVM reading, then switch the DOLBY NR switch (front) to OUT. The reading should decrease 10 dB, ±1.25 dB, and then return to the former level when the DOLBY NR switch is placed IN.

NOTE: Do not take level readings from the AN-300 VU meters except in step 3 and 4 above. Use a VTVM to determine responses in these checks.

CONNECTION PROCEDURE

1. Connect the Audio Oscillator to both Front channels (#1 & #2) LINE jacks.
2. Connect the Front channel (#1 & #2) REC jacks to the Rear channel (#3 & #4) TAPE jacks with short pin-jack cords.

NOTE: Refer to the TEAC DECIBEL TABLE on last page for obtaining conversion of millivolts to dB if your meter does not provide a dB scale.

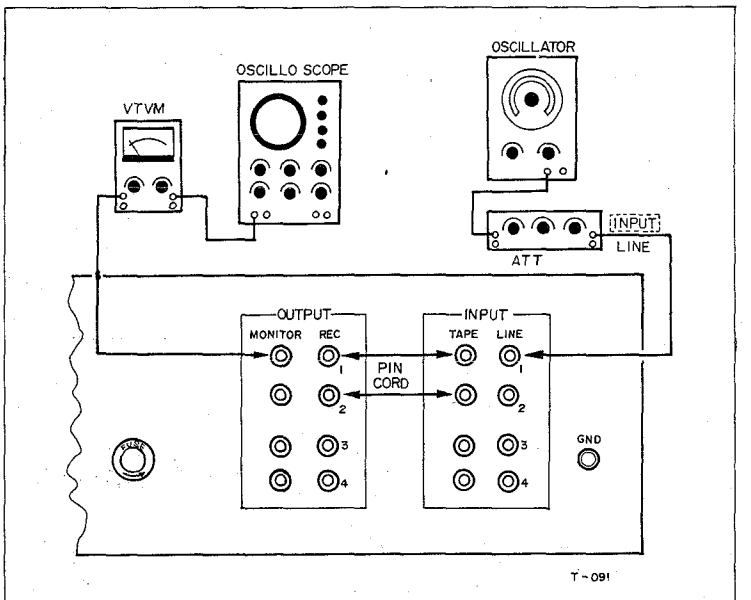


Fig. 11-1 Connection Diagram

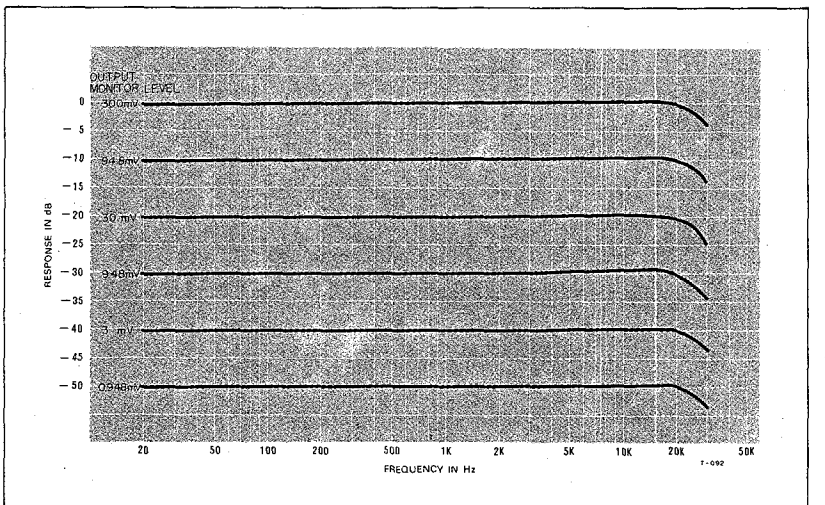
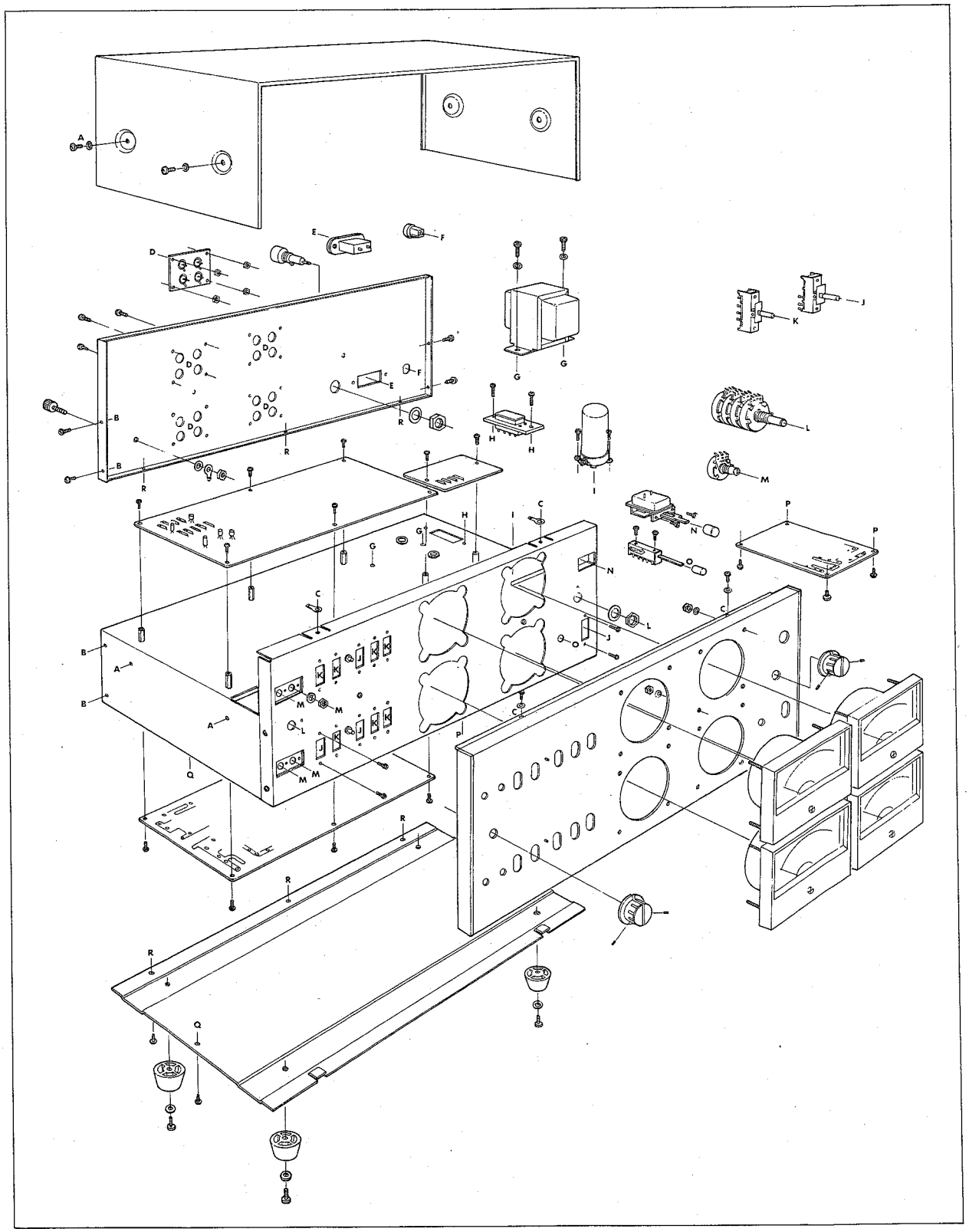
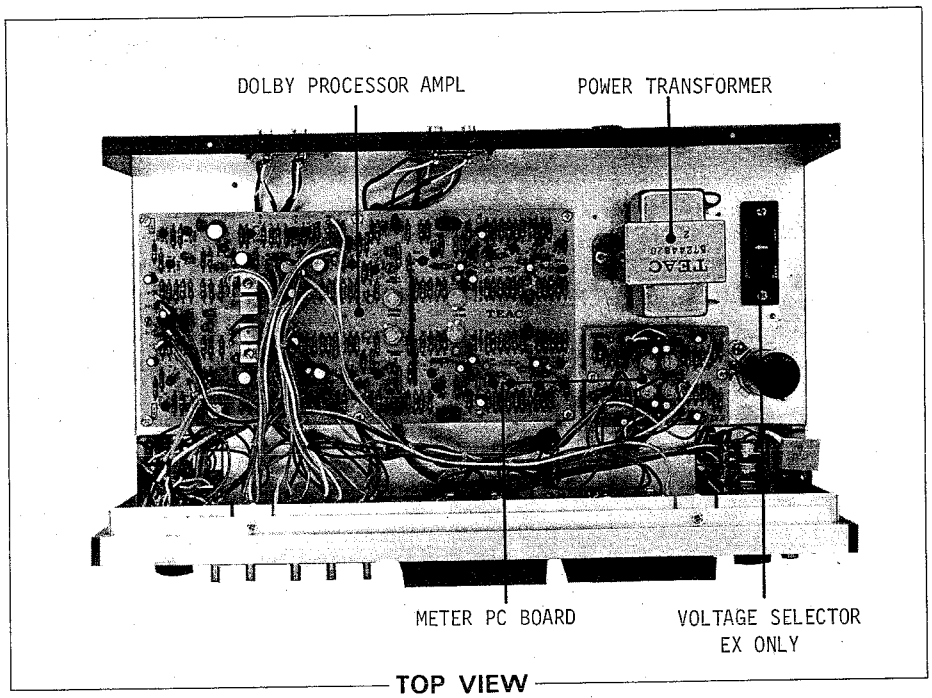


Fig. 11-2 Frequency Response Curve
-Overall-

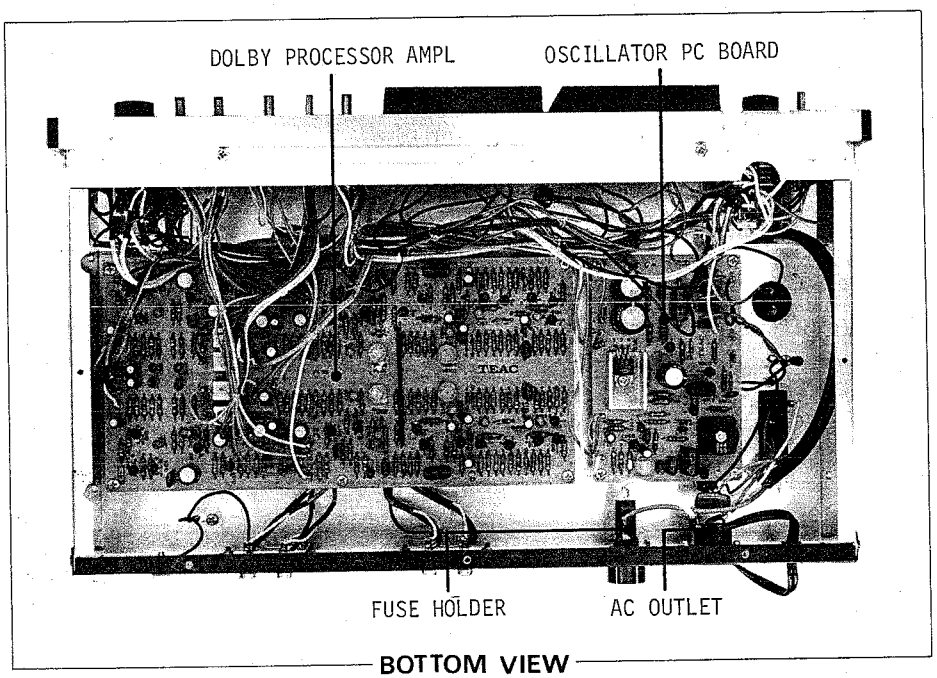
12. PARTIAL DISASSEMBLY



13. PARTS LOCATION



TOP VIEW



BOTTOM VIEW

NOTE: For ordering parts refer to the exploded view of the PARTS LIST An accompanying listing provides the correct part numbers.

14. TROUBLE SHOOTING

NOTE

The following guide lists specific difficulties that could occur in the AN-300

Several possible causes are listed for each malfuncton. Visually inspect the unit for any damage such as broken or burned components or wiring; loose connections; etc.

The AN-300 Noise Reduction Unit employs conventional solid state circuitry and is designed to provide extended trouble free operation if operated in accordance with the operating instructions.

The following difficulties may occur as a result of improper calibration or incorrect operation and do not represnet equipment malfunctions.

* Loss of high frequencies when playing tapes.

  DOLBY switch is IN, but the tape is not Dolby-encoded.

  If non-Dolby tapes are played back through the AN-300 with the DOLBY switch at the IN position a noticeable loss of high frequencies will occur. No benefits are drived in this case, for no noise reduction is achieved unless the tape is recorded and play back through the AN-300. Therefore, when playing non-Dolby-encoded tapes the DOLBY switch should always be in the OUT position.

* Sound is abnormal when using the Dolby process.

  If the AN-300 is properly calibrated to your tape deck, no change in frequency response will occur. The Dolby system does not limit or affect overall freq. response. Only the inherent tape noise and hiss are affected. The complete absence of hiss and noise may cause you to feel that some high frequencies have been lost, but this is not the case.

  However if the play or record calibrations are improperly accomplished a degradation of sound quality will result. Since the record/playback expansion/compression levels must be exactly opposite to achieve maximum noise reduction, proper calibration and operating procedures are of paramount importance.

  If sound quality seems poor or abnormal, recheck the calibration adjustments as outlined in the Instruction Manual.

The following are malfunctions that may occur as a result of component failure.

* Symptom – VU meter indications are sluggish although the AN-300 operates normally.

PROBABLE CAUSES: Defective transistor, Q401∿404 or associated components of meter amplifier PC board assembly #5724478.

Variable resistors VR-401∿404 improperly adjusted. See Adjustment Location of manual.

* Symptom – REC-CAL. oscillator output is incorrect and VR-301 will not adjust properly.

PROBABLE CAUSES: Defective transistor, Q303∿307 or associated components of PC board assy #57244740.

* Symptom – No playback audio, level meters deflect, control at "maximum".

PROBABLE CAUSES: Defective transistor, Q113∿Q115 of Dolby amplifier PC board assy #57245150 (57245160) or associated components.

* Symptom – Playback tape deck meter deflect, but the AN-300 meters do not move and no audio is heard.

PROBABLE CAUSES: Defective transistor, Q101∿Q111 or associated components of Dolby amplifier PC board assy #57245150 (57245160).

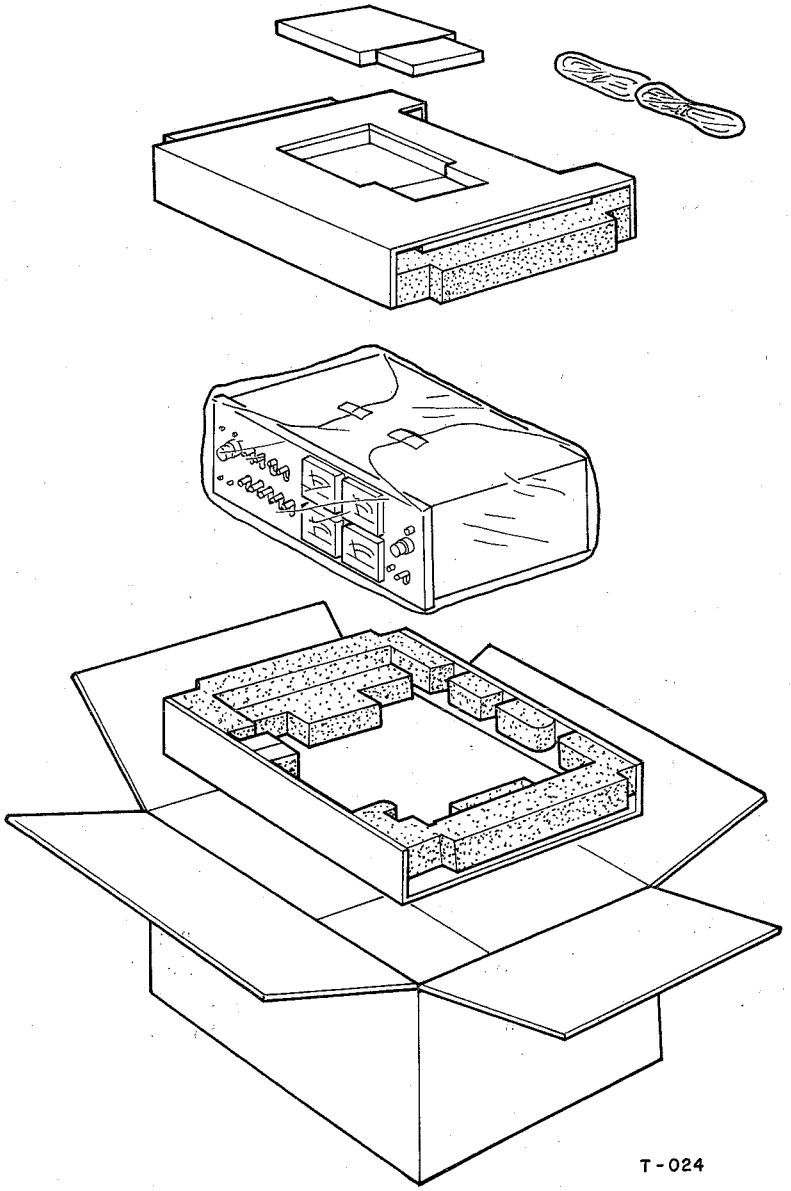
* Symptom – Tape deck will not "record", AN-300 VU meters deflect but no signal is present at tape deck.

PROBABLE CAUSES:

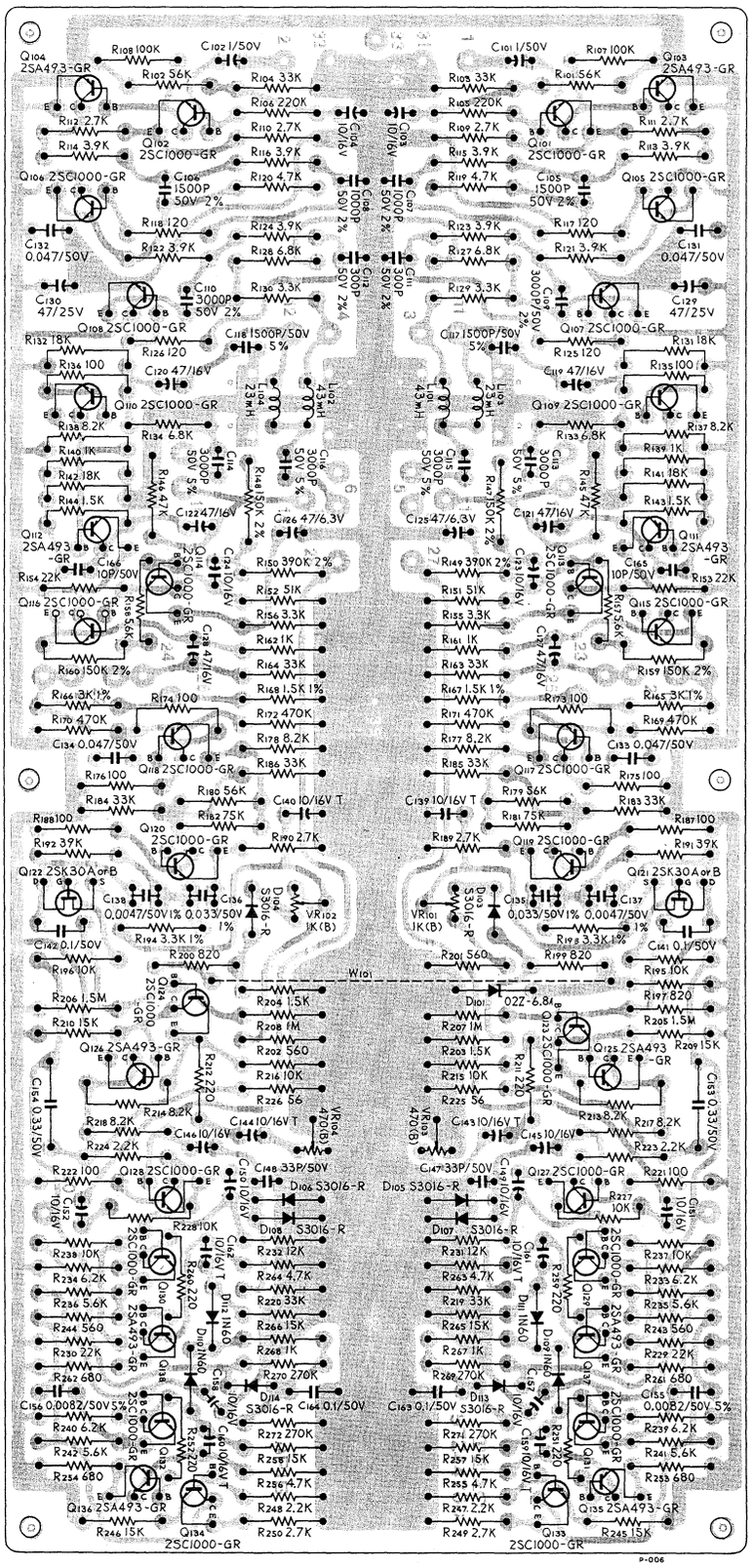
1. Three head tape decks, check setting or tape deck monitor switch, must be in source position.
2. If VU meters of tape deck deflect but recording does not occur, tape deck is defective.
3. If VU meters of tape deck do not move even with monitor switch in source position, check for defective transistor Q113∿Q115 or associated circuitry of Dolby amplifier PC board assy #57245150 (57245160).

15. PAKING FOR SHIPMENT

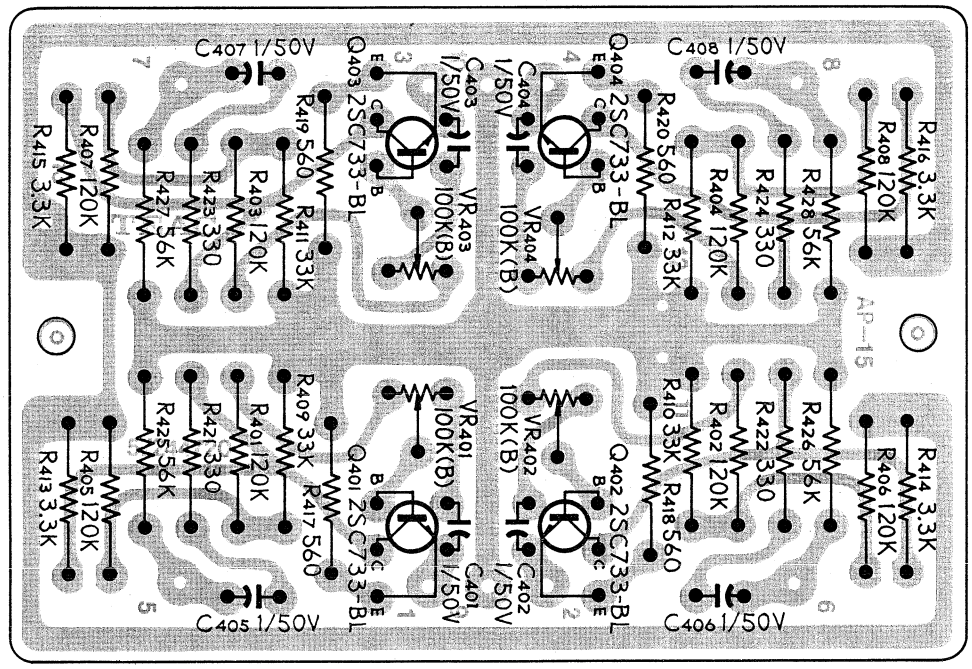
If the unit is to be returned to a TEAC Factory Service Center for repair, carefully pack as shown below.



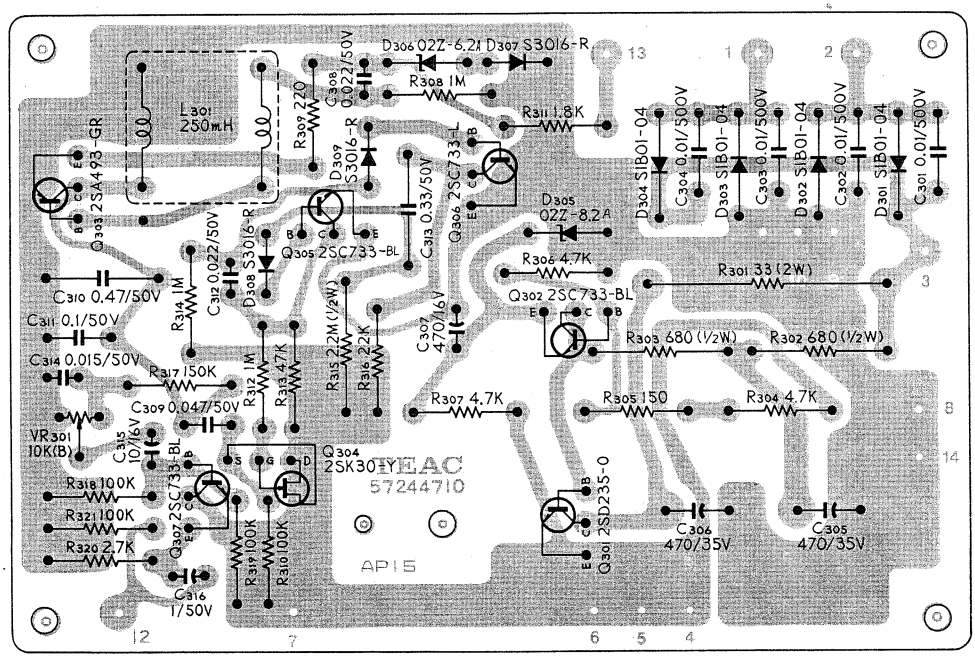
DOLBY PROCESSOR PC BOARD



METER AND OSCILLATOR PC BOARDS



METER



OSCILLATOR

EXPLODED VIEW AND PARTS LIST

REPLACEMENT INFORMATION

Replacement part are available through your nearest TEAC dealer or directly from the TEAC office.
Changes are constantly being made to make TEAC products better and more reliable.
Therefore, when ordering parts, always include the following information:

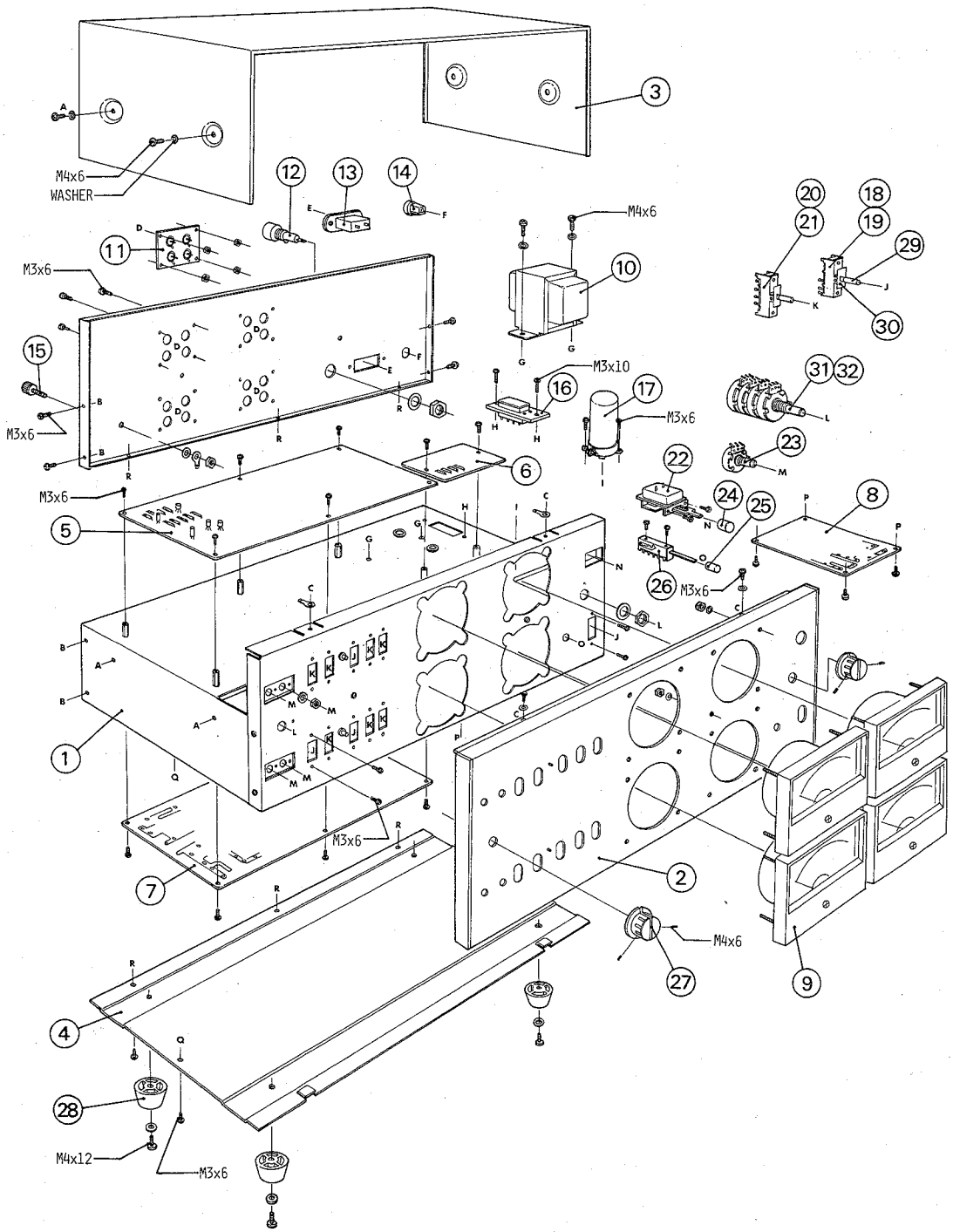
MODEL SERIAL NO. REF NO. PART NO. DESCRIPTION

NOTICE OF MARKET MODEL IDENTIFICATION ABBREVIATIATIONS

DM	For only domestic (Japan) market decks.
EX	For all export versions except TCA or Japan.
TCA	For TCA (US) versions only.

EXPLODED VIEW DIAGRAM

AN-300



PARTS LIST

AN-300 BREAKDOWN

REF. NO.	TEAC PARTS NO.	DESCRIPTION	1st	2nd
1	57244800	Chassis, Main (Assy)		
2	57244870	Panel, Front (Assy)		
3	57244830	Bonnet		
4	57244900	Cover, Bottom		
5	57245150	PC Board Assy, Dolby Ampl. (A) 2SK30DA		
6	57244780	PC Board Assy, Level Meter		
7	57245160	PC Board Assy, Dolby Ampl. (B) 2SD30DB		
8	57244740	PC Board Assy, Oscillator (400Hz)		
9	50581410	Meter, Level		
10	57244810	Transformer, Power (DM,TCA)		
	57244820	Transformer, Power (EX Only)		
11	50430190	Jack, Pin, US 4P		
12	50924500	Fuse Holder		
13	50431151	Outlet, AC		
14	50276810	Grommet, Cord		
15	50454071	Post, Grounding		
16	50927611	Voltage Selector		
17	50551320	Capacitor, Elec., 1000 50V		
18	50936690	SW, Lever (Monitor source)		
19	50936960	SW, Lever (DOLBY NR)		
20	50937580	SW, Lever (MPX Filter, Input)		
21	50447300	SW, Lever (MODE, CAL Tone)		
22	50444500	SW, Push (Power)		
23	57243880	VR, Single 100k(B) (PLAY CAL)		
24	50937270	Push Button (POWER)		
25	50938760	Push Button (Recording check)		
26	57244910	SW, Push (Recording check)		
27	50253840	Knob, B-25B (INPUT Level, OUTPUT Level)		
28	50283830	Mount Foot		
29	57240380	Knob, Lever SW		
30	50937220	Sheet, Lever SW		
31	57244940	VR, Single (INPUT Level) 100k(B)		
32	57244950	VR, Single (OUTPUT Level) 10k(B)		

DOLBY PROCESSOR AMPLIFIER
CIRCUIT PARTS

CIRCUIT REF.NO.	TEAC PARTS NO.	DESCRIPTION	1st	2nd
	57245150	PC Board Assy, A (2SK30DA)		
	57245160	PC Board Assy, B (2SK30DB)		
		CAPACITORS		
		*ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED (*50V 2%, **50V 5%).*		
C101/102	50554540	Elec. 1		
C103/104·123∿4	50554050	Elec. 10 16V		
C105/106	50596330	Polyst. 1500p *		
C107/108	50596290	Polyst. 1000p *		
C109/110	50596400	Polyst. 3000p *		
C111/112	50596160	Polyst. 300p *		
C113∿116	50592600	Polyst. 3000p **		
C117/118	50592530	Polyst. 1500p **		
C119∿122·127∿8	50554010	Elec. 47 16V		
C125/126	50554030	Elec. 47 6.3V		
C129/130	50554020	Elec. 47 25V		
C131∿134	50548270	Mylar .047 *(10%)		
C135/136	50594850	Mylar .033 *(1%)		
C137/138	50594810	Mylar .0047 *(1%)		
C139/140·143∿4	50546810	Tantalum 10 16V		
C141/142·163∿4	50548520	Mylar 0.1		
C145/146·149∿0	50554050	Elec. 10 16V		
C147/148	50543510	Mica 33p		
C151/152·157∿8	50554050	Elec. 10 16V		
C153/154	50595600	Mylar .33 *(10%)		
C155/156	50548940	Mylar .0082 **		
C159∿162	50546810	Tantalum 10 16V		
C165/166	50543310	Mica 10p		
		DIODES		
D101	50422880	Zener 02Z6.8A		
D103∿108·113∿4	50422440	Silicon S3016-R		
D109∿112	50422130	Germanium IN60		
		COILS		
L101/102	57244760	43mH		
L103/104	50566650	23mH		

DOLBY PROCESSOR AMPLIFIER
CIRCUIT PARTS, con't

CIRCUIT REF.NO.	TEAC PARTS NO.	DESCRIPTION	1st	2nd
		SILICON TRANSISTORS		
Q101/102·105∿0	50424100	2SC1000(GR)		
Q103/104·111∿2	50424110	2SA493(GR)		
Q113∿120·123∿4	50424100	2SC1000(GR)		
Q121/122	57240981	FET 2SD30DA		
Q125/126·135∿8	50424110	2SA493(GR)		
Q127∿134	50424100	2SC1000(GR)		
		CARBON RESISTORS		
		ALL RESISTORS IN OHMS, 5% TOLERANCE 1/4 WATT UNLESS OTHERWISE NOTED.		
R101/102·179∿0	50573240	56k		
R103/104·163∿4	50573180	33k		
R105/106	50573380	220k		
R107/108	50573300	100k		
R109∿112	50572920	2.7k		
R113∿116·121∿4	50572960	3.9k		
R117/118·125∿6	50572600	120		
R119/120	50572980	4.7k		
R127/128·133∿4	50573020	6.8k		
R129/130	50572940	3.3k		
R131/132	50573120	18k		
R135/136·173∿6	50572580	100		
R137/138·177∿8	50573040	8.2k		
R139/140·161∿2	50572820	1k		
R141/142	50571120	18k		
R143/144·203∿4	50572860	1.5k		
R145/146	50573220	47k		
R147/148·159∿0	50529970	150k 2%		
R149/150	50259950	390k 2%		
R151/152	50571230	51k		
R153/154	50573140	22k		
R155/156	50570940	3.3k		
R157/158·	50573000	5.6k		
R165/166	50529980	3k 1%		
R167/168	50529990	1.5k 1%		
R169 172	50573460	470k		
R181/182	50573270	75k		
R183 186·219∿0	50573180	33k		
R187/188·221∿2	50572580	100		
R189/190·249∿0	50572920	2.7k		

DOLBY PROCESSOR AMPLIFIER

CIRCUIT PARTS, con't

CIRCUIT REF.NO.	TEAC PARTS NO.	DESCRIPTION	1st	2nd
R191/192	50573200	39k		
R193/194	50529960	3.3k 1%		
R195/196·215∿6	50573060	10k		
R197·199/200	50572800	820		
R201/202·243∿4	50572760	560		
R205/206	50573580	1.5M		
R207/208	50573540	1M		
R209/210·245∿6	50573100	15k		
R211/212·251∿2	50572660	220		
R213/214·217∿8	50573040	8.2k		
R223/224·247∿8	50572900	2.2k		
R225/226	50572520	56		
R227/228·237∿8	50573000	10k		
R229/230	50573140	22k		
R231/232	50573080	12k		
R233/234·239∿0	50573010	6.2k		
R235/236·241∿2	50573000	5.6k		
R253/254·261∿2	50572780	680		
R255/256·263∿4	50572980	4.7k		
R257/258·265∿6	50573100	15k		
R259/260	50572660	220		
R267/268	50572820	1k		
R269∿272	50573400	270k		
		POTENTIOMETER		
VR101/102	50533530	1kΩ B		
VR103/104	50533440	470Ω B		

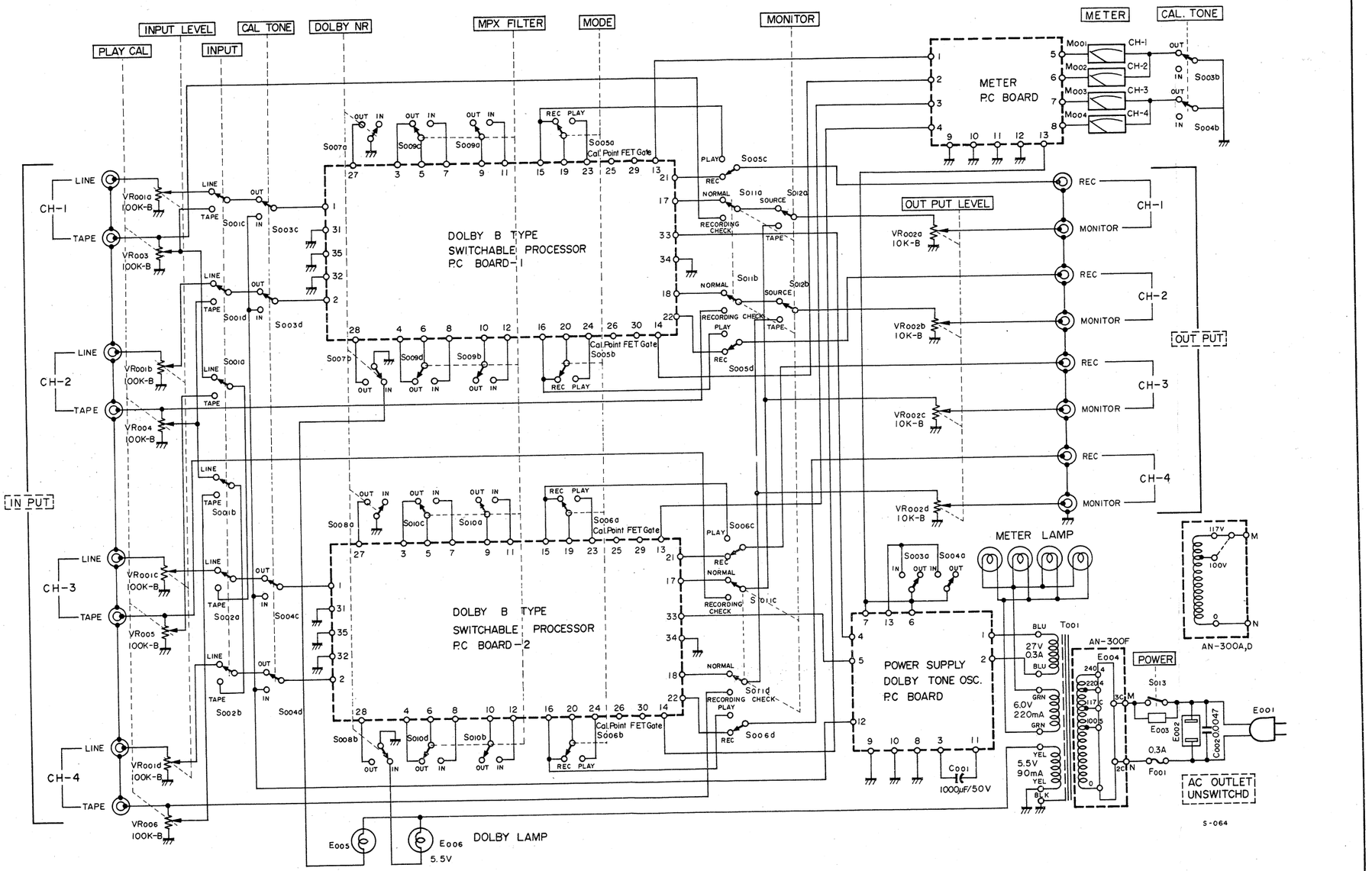
OSCILLATOR AMPLIFIER
CIRCUIT PARTS

CIRCUIT REF.NO.	TEAC PARTS NO.	DESCRIPTION	1st	2nd
	57244740	PC Board Assy		
		CAPACITORS		
*ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED (*50V 10%).*				
C301∿304	50542230	Seramic 0.01 500V DC		
C305/306	50554620	Elec. 470 35V		
C307	50554400	Elec. 470 16V		
C308·312	50548290	Mylar 0.022 *		
C309	50548270	Mylar 0.047 *		
C310	50595640	Mylar 0.47 *		
C311	50548520	Mylar 0.1 *		
C313	50595600	Mylar 0.33 *		
C314	50548420	Mylar 0.015 *		
C315	50554050	Elec. 10 16V		
C316	50554540	Elec. 1 50V		
		DIODES		
D301∿304	50422850	Silicon SIB01-04		
D305	50422860	Zener 02Z8.2A		
D306	50422870	Zener 02Z6.2A		
D307∿309	50422440	Silicon S3016-R		
		COIL		
L301	57244750	OSC 250mH		
		SILICON TRANSISTORS		
Q301	50424190	2SD235(O)		
Q302·307	50424440	2SC733(BL)		
Q303	50424110	2SA493(GR)		
Q304	50423840	FET 2SD30(Y)		
Q305;306	50423510	2SC733(Y)		
		CARBON RESISTORS		
ALL RESISTORS IN OHMS, 5% TOLERANCE 1/4 WATT UNLESS OTHERWISE NOTED.				
R301	50578460	33 2W		
R302/303	50574780	680 1/2W		
R304·306/307	50572980	4.7k		
R305	50572620	150		
R308·312∿314	50573540	1M		
R309	50572660	220		
R310·318∿9·321	50573300	100k		
R311	50572880	1.8k		
R313	50573220	47k		
R315	50574180	2.2M 1/2W		
R316	50573140	22k		
R317	50573340	150k		
R320	50572920	2.7k		
		POTENTIOMETER		
VR301	50533480	10kΩ B		

METER AMPLIFIER
CIRCUIT PARTS

CIRCUIT REF.NO.	TEAC PARTS NO.	DESCRIPTION
	57244780	PC Board Assy
C401∿408	50554540	Elec. 1μF 50V
Q401∿404	50424440	Silicon 2SC733(BL)
R401∿408	50573320	120kΩ 5% 1/4W
R409∿412	50573180	33kΩ 5% 1/4W
R413∿416	50572940	3.3kΩ 5% 1/4W
R417∿420	50513910	560Ω 5% 1/4W
R421∿424	50572700	330Ω 5% 1/4W
R425∿428	50513990	56kΩ 5% 1/4W
VR401∿404	50533490	VR 100kΩ B

WIRING DIAGRAM



NOTES

AN-300A for TCA model

AN-300D for DM model

AN-300F for EX model

▭ :on FRONT panel

▭ :on REAR panel

S001a d : INPUT switch (1CH,2CH)	S008a b : DOLBY NR switch (3CH,4CH)
S002a b : INPUT switch (3CH,4CH)	S009a d : MPX FILTER switch (1CH,2CH)
S003a c : CAL TONE switch (1CH,2CH)	S010a d : MPX FILTER switch (3CH,4CH)
S004a c : CAL TONE switch (3CH,4CH)	S011a d : MONITOR,4CH OR SWITCHABLE DECK
S005a d : MODE switch (1CH,2CH)	S012a b : MONITOR, SIMUL REC/PLAY
S006a d : MODE switch (3CH,4CH)	S013 : POWER Switch
S007a b : DOLBY NR switch (1CH,2CH)	

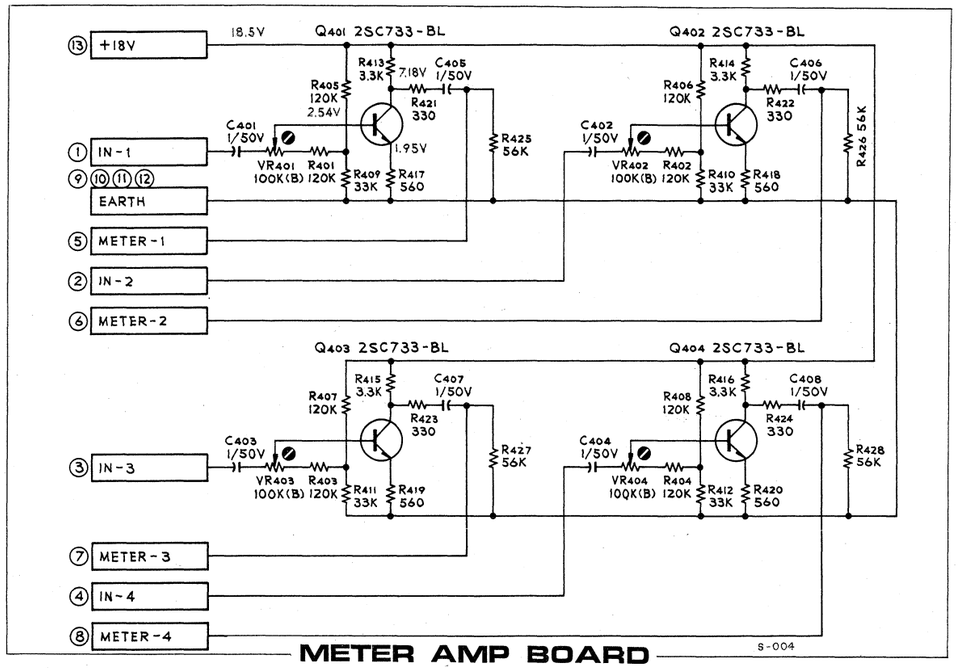
REVISION	DATE	CHANGE NO
6		
5		
4		
3		
2		
1		

MODEL NO.

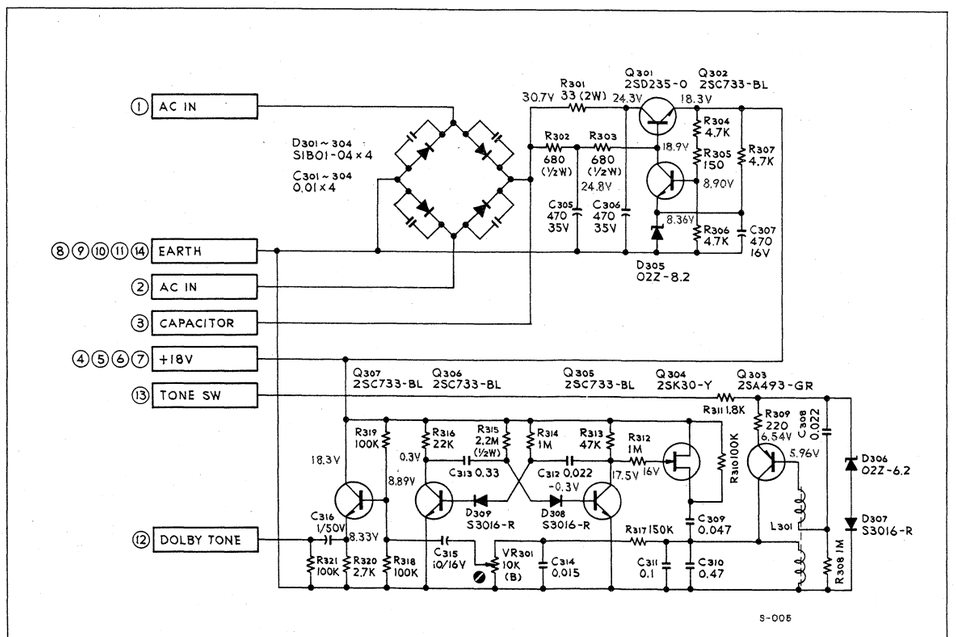
SHEET NO.

TEAC CORPORATION

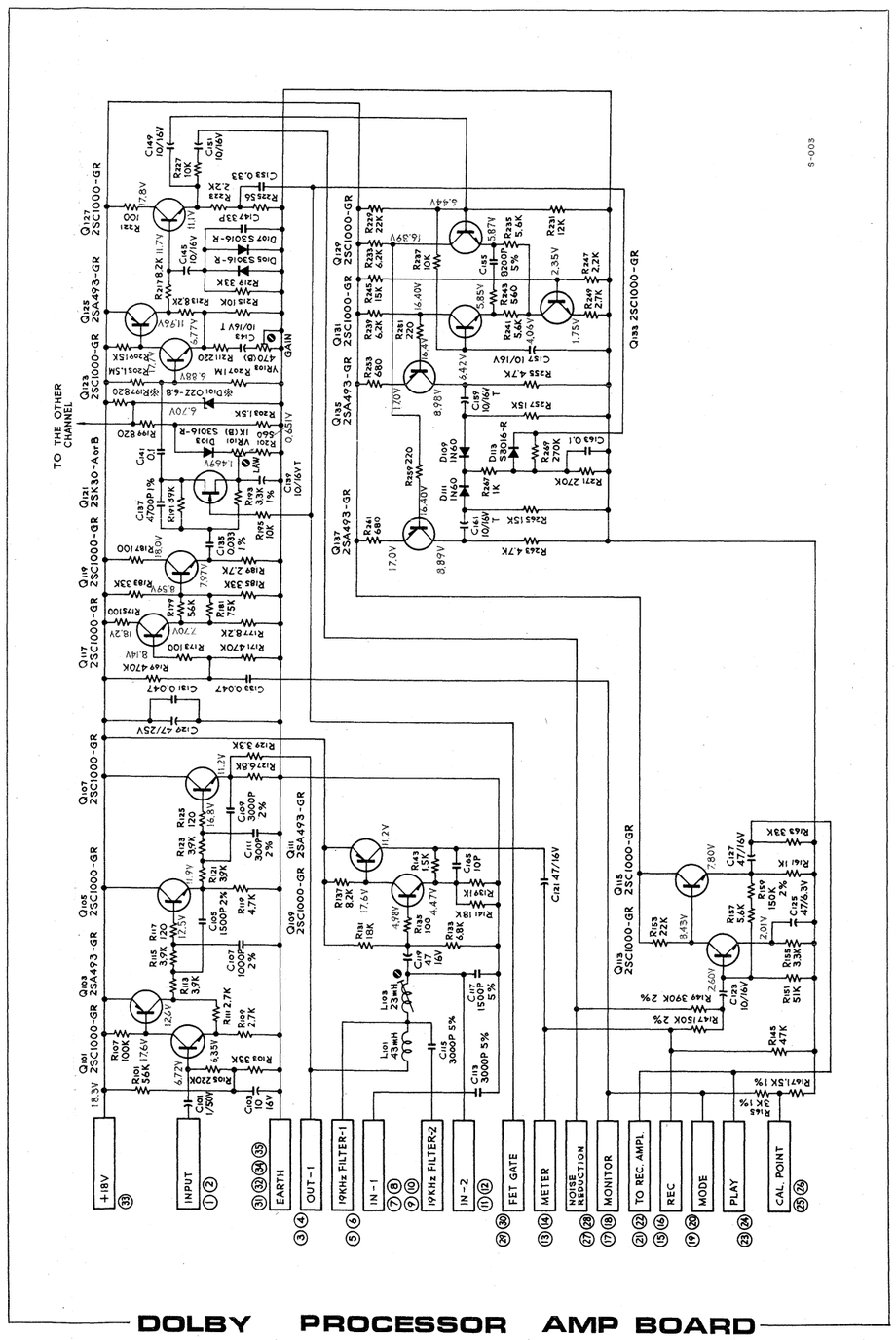
SCHEMATIC DIAGRAMS



METER AMP BOARD



OSCILLATOR AMP BOARD



DOLBY PROCESSOR AMP BOARD

TEAC DECIBEL TABLE

1	.774	0 db	1	.774	0 db	1	.774	0db	1	.774	0 db	1	.774	0 db	1	.774	0 db	1	.774	0 db	1	179.	126.	89.4	63.2
																			600Ω			32Ω	16Ω	8Ω	4Ω
.944	.730	120.5	9.44	7.30	100.5	94.4	73.0	80.5	944	730	60.5	9.44	7.30	40.5	94.4	73.0	20.5	.944	.730	0.5	.891	169	119	83.9	59.6
.891	.690	121	8.91	6.90	101	89.1	69.0	81	891	690	61	8.91	6.90	41	89.1	69.0	21	.891	.690	1	.794	159	112	79.3	56.3
.841	.651	121.5	8.41	6.51	101.5	84.1	65.1	81.5	841	651	61.5	8.41	6.51	41.5	84.1	65.1	21.5	.841	.651	1.5	.708	150	106	74.9	53.1
.794	.615	122	7.94	6.15	102	79.4	61.5	82	794	615	62	7.94	6.15	42	79.4	61.5	22	.794	.615	2	.631	142	100	70.7	50.2
.750	.580	122.5	7.50	5.80	102.5	75.0	58.0	82.5	750	580	62.5	7.50	5.80	42.5	75.0	58.0	22.5	.750	.580	2.5	.562	134	94.5	66.7	47.3
.707	.548	123	7.07	5.48	103	70.7	54.8	83	707	548	63	7.07	5.48	43	70.7	54.8	23	.707	.548	3	.501	126	89.3	63.0	44.7
.668	.517	123.5	6.68	5.17	103.5	66.8	51.7	83.5	668	517	63.5	6.68	5.17	43.5	66.8	51.7	23.5	.668	.517	3.5	.447	119	84.3	59.4	42.2
.630	.488	124	6.30	4.88	104	63.0	48.8	84	630	488	64	6.30	4.88	44	63.0	48.8	24	.530	.488	4	.398	113	79.5	56.1	39.8
.596	.461	124.5	5.96	4.61	104.5	59.6	46.1	84.5	596	461	64.5	5.96	4.61	44.5	59.6	46.1	24.5	.596	.461	4.5	.355	106	75.1	53.0	37.6
.562	.435	125	5.62	4.35	105	56.2	43.5	85	562	435	65	5.62	4.35	45	56.2	43.5	25	.562	.435	5	.316	100	70.9	50.0	35.5
.531	.411	125.5	5.31	4.11	105.5	53.1	41.1	85.5	531	411	65.5	5.31	4.11	45.5	53.1	41.1	25.5	.531	.411	5.5	.282	94.9	67.0	47.3	33.5
.501	.388	126	5.01	3.88	106	50.1	38.8	86	501	388	66	5.01	3.88	46	50.1	38.8	26	.501	.388	6	.251	89.6	63.2	44.6	31.7
.473	.366	126.5	4.73	3.66	106.5	47.3	36.6	86.5	473	366	66.5	4.73	3.66	46.5	47.3	36.6	26.5	.473	.366	6.5	.224	84.5	59.6	42.1	29.9
.446	.345	127	4.46	3.45	107	44.6	34.5	87	446	345	67	4.46	3.45	47	44.6	34.5	27	.446	.345	7	.199	79.7	56.2	39.7	28.1
.422	.326	127.5	4.22	3.26	107.5	42.2	32.6	87.5	422	326	67.5	4.22	3.26	47.5	42.2	32.6	27.5	.422	.326	7.5	.178	75.3	53.1	37.5	26.6
.398	.308	128	3.98	3.08	108	39.8	30.8	88	398	308	68	3.98	3.08	48	39.8	30.8	28	.398	.308	8	.158	71.1	50.2	35.4	25.1
.376	.290	128.5	3.76	2.90	108.5	37.6	29.0	88.5	376	290	68.5	3.76	2.90	48.5	37.6	29.0	28.5	.376	.290	8.5	.141	67.0	47.3	33.3	23.7
.354	.274	129	3.54	2.74	109	35.4	27.4	89	354	274	69	3.54	2.74	49	35.4	27.4	29	.354	.274	9	.125	63.3	44.7	31.5	22.3
.335	.259	129.5	3.35	2.59	109.5	33.5	25.9	89.5	335	259	69.5	3.35	2.59	49.5	33.5	25.9	29.5	.335	.259	9.5	.112	59.8	42.2	29.8	21.1
.316	.244	130	3.16	2.44	110	31.6	24.4	90	316	244	70	3.16	2.44	50	31.6	24.4	30	.316	.244	10	.100	56.4	39.8	28.1	19.9
.298	.232	130.5	2.98	2.32	110.5	29.8	23.2	90.5	298	232	70.5	2.98	2.32	50.5	29.8	23.2	30.5	.298	.232	10.5	.0891	53.6	37.0	26.7	18.9
.281	.218	131	2.81	2.18	111	28.1	21.8	91	281	218	71	2.81	2.18	51	28.1	21.8	31	.281	.218	11	.0794	50.3	35.5	25.1	17.8
.265	.205	131.5	2.65	2.05	111.5	26.5	20.5	91.5	265	205	71.5	2.65	2.05	51.5	26.5	20.5	31.5	.265	.205	11.5	.0708	47.3	33.4	23.6	16.7
.251	.194	132	2.51	1.94	112	25.1	19.4	92	251	194	72	2.51	1.94	52	25.1	19.4	32	.251	.194	12	.0631	44.8	31.6	22.3	15.8
.237	.183	132.5	2.37	1.83	112.5	23.7	18.3	92.5	237	183	72.5	2.37	1.83	52.5	23.7	18.3	32.5	.237	.183	12.5	.0562	42.3	29.8	21.0	14.9
.223	.173	133	2.23	1.73	113	22.3	17.3	93	223	173	73	2.23	1.73	53	22.3	17.3	33	.223	.173	13	.0501	40.0	28.2	19.9	14.1
.211	.163	133.5	2.11	1.63	113.5	21.1	16.3	93.5	211	163	73.5	2.11	1.63	53.5	21.1	16.3	33.5	.211	.163	13.5	.0447	37.6	26.6	18.7	13.3
.199	.154	134	1.99	1.54	114	19.9	15.4	94	199	154	74	1.99	1.54	54	19.9	15.4	34	.199	.154	14	.0398	35.6	25.1	17.7	12.6
.188	.145	134.5	1.88	1.45	114.5	18.8	14.5	94.5	188	145	74.5	1.88	1.45	54.5	18.8	14.5	34.5	.188	.145	14.5	.0355	33.5	23.6	16.7	11.8
.177	.137	135	1.77	1.37	115	17.7	13.7	95	177	137	75	1.77	1.37	55	17.7	13.7	35	.177	.137	15	.0316	31.6	22.3	15.7	11.2
.168	.130	135.5	1.68	1.30	115.5	16.8	13.0	95.5	168	130	75.5	1.68	1.30	55.5	16.8	13.0	35.5	.168	.130	15.5	.0282	30.0	21.2	14.9	10.6
.158	.122	136	1.58	1.22	116	15.8	12.2	96	158	122	76	1.58	1.22	56	15.8	12.2	36	.158	.122	16	.0251	28.2	19.9	14.0	9.55
.150	.116	136.5	1.50	1.16	116.5	15.0	11.6	96.5	150	116	76.5	1.50	1.16	56.5	15.0	11.6	36.5	.150	.116	16.5	.0224	26.8	18.9	13.3	9.46
.141	.109	137	1.41	1.09	117	14.1	10.9	97	141	109	77	1.41	1.09	57	14.1	10.9	37	.141	.109	17	.0199	25.2	17.8	12.5	8.89
.133	.103	137.5	1.33	1.03	117.5	13.3	10.3	97.5	133	103	77.5	1.33	1.03	57.5	13.3	10.3	37.5	.133	.103	17.5	.0178	23.8	16.8	11.8	8.40
.125	.097	138	1.25	.975	118	12.5	9.75	98	125	97.5	78	1.25	975	58	12.5	9.75	38	.125	.097	18	.0158	22.4	15.8	11.1	7.91
.119	.092	138.5	1.19	.921	118.5	11.9	9.21	98.5	119	92.1	78.5	1.19	921	58.5	11.9	9.21	38.5	.119	.092	18.5	.0141	21.2	15.0	10.6	7.51
.112	.086	139	1.12	.869	119	11.2	8.69	99	112	86.9	79	1.12	899	59	11.2	8.69	39	.112	.086	19	.0125	19.9	14.0	9.43	6.69
.106	.082	139.5	1.06	.820	119.5	10.6	8.20	99.5	106	82.0	79.5	1.06	820	59.5	10.6	8.20	39.5	.106	.082	19.5	.0112	18.9	13.4	8.85	6.28
.100	.077	140	1.00	.774	120	10.0	7.74	100	100	77.4	80	1.00	774	60	10.0	7.74	40	.100	.077	20	.0100	17.8	12.5		
μV	μV	− db	μV	μV	− db	μV	μV	− db	μV	μV	− db	mV	mV	− db	mV	mV	− db	V	V	− db	POWER RATIO	mV	mV	mV	mV

Reiationship between decibels, currents, voltage and power ratios.

Decibel (Voltage)	Loss	Gain	Decibel (Power)	Decibel (Voltage)	Loss	Gain	Decibel (Power)	Decibel (Voltage)	Loss	Gain	Decibel (Power)	Decibel (Voltage)	Loss	Gain	Decibel (Power)	Decibel (Voltage)	Loss	Gain	Decibel (Power)
.0	1.0000	1.000	.0	4.0	.6310	1.555	2.00	8.0	.3981	2.512	4.00	12.0	.2512	3.981	6.00	16.0	.1585	6.310	8.00
.1	.9886	1.012	.05	.1	.6237	1.603	.05	.1	.3936	2.541	.05	.1	.2483	4.027	.05	.1	.1567	6.383	.05
.2	.9772	1.023	.10	.2	.6166	1.622	.10	.2	.3890	2.570	.10	.2	.2455	4.074	.10	.2	.1549	6.457	.10
.3	.9661	1.035	.15	.3	.6095	1.641	.15	.3	.3846	2.600	.15	.3	.2427	4.121	.15	.3	.1531	6.531	.15
.4	.9550	1.047	.20	.4	.6026	1.660	.20	.4	.3802	2.630	.20	.4	.2399	4.169	.20	.4	.1514	6.607	.20
.5	.9441	1.059	.25	.5	.5957	1.679	.25	.5	.3758	2.661	.25	.5	.2371	4.217	.25	.5	.1496	6.683	.25
.6	.9333	1.072	.30	.6	.5888	1.698	.30	.6	.3715	2.692	.30	.6	.2344	4.266	.30	.6	.1479	6.761	.30
.7	.9226	1.084	.35	.7	.5821	1.718	.35	.7	.3673	2.723	.35	.7	.2317	4.315	.35	.7	.1462	6.839	.35
.8	.9120	1.096	.40	.8	.5754	1.738	.40	.8	.3631	2.754	.40	.8	.2291	4.365	.40	.8	.1445	6.918	.40
.9	.9016	1.109	.45	.9	.5679	1 758	.45	.9	.3589	2.786	.45	.9	.2265	4.416	.45	.9	.1429	6.998	.45
1.0	.8913	1.122	.50	5.0	.5623	1.778	.50	9.0	.3541	2.817	.50	13.0	.2239	4.467	.50	17.0	.1413	7.070	.50
.1	.8810	1.135	.55	.1	.5559	1.799	.55	.1	.3508	2.851	.55	.1	.2213	4.519	.55	.1	.1396	7.161	.55
.2	.8710	1.148	.60	.2	.5495	1.820	.60	.2	.3467	2.884	.60	.2	.2188	4.571	.60	.2	.1380	7.244	.60
.3	.8610	1.161	.65	.3	.5433	1.841	.65	.3	.3428	2.917	.65	.3	.2163	4.624	.65	.3	.1365	7.328	.65
.4	.8511	1.175	.70	.4	.5370	1.862	.70	.4	.3388	2.951	.70	.4	.2138	4.677	.70	.4	.1349	7.413	.70
.5	.8414	1.189	.75	.5	.5309	1.884	.75	.5	.3350	2.985	.75	.5	.2113	4.732	.75	.5	.1334	7.499	.75
.6	.8318	1.202	.80	.6	.5248	1.905	.80	.6	.3311	3.020	.80	.6	.2089	4.786	.80	.6	.1318	7.586	.80
.7	.8222	1.216	.85	.7	.5188	1.928	.85	.7	.3273	3.055	.85	.7	.2045	4.842	.85	.7	.1303	7.674	.85
.8	.8128	1.230	.90	.8	.5129	1.960	.90	.8	.3236	3.090	.90	.8	.2042	4.898	.90	.8	.1288	7.762	.90
.9	.8035	1.245	.95	.9	.5070	1.972	.95	.9	.3199	3.126	.95	.9	.2018	4.955	.95	.9	.1274	7.852	.95
2.0	.7943	1.259	1.00	6.0	.5012	1.995	3.00	10.0	.3162	3.162	5.00	14.0	.1995	5.012	7.00	18.0	.1259	7.943	9.00
.1	.7852	1.274	.05	.1	.4955	2.018	.05	.1	.3126	3.199	.05	.1	.1972	5.070	.05	.1	.1245	8.035	.05
.2	.7762	1.288	.10	.2	.4898	2.042	.10	.2	.3090	3.236	.10	.2	.1950	5.129	.10	.2	.1230	8.128	.10
.3	.7684	1.303	.15	.3	.4842	2.065	.15	.3	.3055	3.273	.15	.3	.1928	5.188	.15	.3	.1216	8.222	.15
.4	.7586	1.316	.20	.4	.4785	2.089	.20	.4	.3020	3.311	.20	.4	.1905	5.248	.20	.4	.1202	8.318	.20
.5	.7499	1.334	.25	.5	.4732	2.113	.25	.5	.2985	3.350	.25	.5	.1884	5.309	.25	.5	.1189	8.414	.25
.6	.7413	1.349	.30	.6	.4677	2.138	.30	.6	.2951	3.388	.30	.6	.1862	5.370	.30	.6	.1175	8.511	.30
.7	.7328	1.365	.35	.7	.4624	2.163	.35	.7	.2917	3.428	.35	.7	.1841	5.433	.35	.7	.1161	8.610	.35
.8	.7244	1.380	.40	.8	.4571	2.188	.40	.8	.2884	3.467	.40	.8	.1820	5.495	.40	.8	.1148	8.710	.40
.9	.7161	1.396	.45	.9	.4519	2.213	.45	.9	.2851	3.508	.45	.9	.1799	5.559	.45	.9	.1135	8.811	.45
3.0	.7073	1.413	.50	7.0	.4467	2.239	.50	11.0	.2818	3.548	.50	15.0	.1778	5.623	.50	19.0	.1122	8.913	.50
.1	.6998	1.429	.55	.1	.4416	2.265	.55	.1	.2786	3.589	.55	.1	.1758	5.689	.55	.1	.1109	9.016	.55
.2	.6918	1.445	.60	.2	.4365	2.291	.60	.2	.2754	3.631	.60	.2	.1738	5.754	.60	.2	.1096	9.120	.60
.3	.6839	1.462	.65	.3	.4315	2.317	.65	.3	.2723	3.673	.65	.3	.1718	5.821	.65	.3	.1084	9.226	.65
.4	.6761	1.479	.70	.4	.4266	2.344	.70	.4	.2692	3.715	.70	.4	.1698	5.888	.70	.4	.1072	9.333	.70
.5	.6683	1.496	.75	.5	.4217	2.371	.75	.5	.2661	3.756	.75	.5	.1679	5.957	.75	.5	.1059	9.441	.75
.6	.6607	1.514	.80	.6	.4169	2.399	.80	.6	.2630	3.802	.80	.6	.1660	6.026	.80	.6	.1047	9.550	.80
.7	.6531	1.531	.85	.7	.4121	2.427	.85	.7	.2600	3.846	.85	.7	.1641	6.095	.85	.7	.1035	9.661	.85
.8	.6457	1.549	.90	.8	.4074	2.455	.90	.8	.2570	3.890	.90	.8	.1622	6.166	.90	.8	.1023	9.772	.90
.9	.6383	1.567	.95	.9	.4027	2.483	.95	.9	.2541	3.936	.95	.9	.1603	6.237	.95	.9	.1012	9.886	.95

Decibel (Voltage)	Loss	Gain	Decibel (Power)
20.0	.1000	10.00	10.00
	Use the same numbers as 0-20 Db., but shift point one step to the left. Thus since 10 Db.=.3162 30 Db.=.03162	Use the same numbers as 0-20 Db., but shift point one step to the right. Thus since 10 Db.=3.162 30 Db.=31.62	This column repeats every 10 Db. instead of every 23 Db.